

CLAIMS

1. (Currently Amended) A method of identifying an article of interest comprising
providing one of a plurality of RF antennas each having a non-linear element and
being resonant at one of plurality of different frequencies positioned on an article of
interest,
interrogating said one RF antenna with RF energy of a first frequency,
converting said interrogating RF energy into reflected RF energy of a different
frequency from said first frequency, and
sensing said reflected RF energy and on the basis of ~~said different frequencies a~~
~~difference between said first frequency and said different frequency~~ determining if a
specific said antenna is present.
2. (Original) The method of claim 1 including
said non-linear element is a rectifying diode.
3. (Original) The method of claim 2 including
said specific antenna is present and said different frequency being about double
said first frequency.
4. (Currently Amended) The method of claim 1 including
said one RF antenna assembly providing a half wave rectified sine wave from said
interrogating RF energy.
5. (Original) The method of claim 4 including
said interrogating RF energy producing a sine wave.
6. (Currently Amended) The method of claim 4 including
said half wave rectified sine wave has a fundamental Fourier series
which is about double the frequency of said sine wave.
7. (Original) The method of claim 1 including

employing two said interrogating frequencies in determining if an article of interest is present.

8. (Original) The method of claim 7 including

employing a spectrum analyzer in analyzing said different frequency.

9. (Original) The method of claim 1 including

employing a binary analysis in determining if an article of interest is present.

10. (Original) The method of claim 7 including

employing a spectrum analyzer structured to monitor each interrogating frequency in determining if an article of interest is present.

11. (Original) The method of claim 9 including

employing said method to provide specific identification of the antenna if an article of interest is present.

12. (Original) The method of claim 1 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

13. (Original) The method of claim 1 including

said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations and humidity, chemical environment, biological environment, radiation, and light.

14. (Original) The method of claim 12 including

employing as said non-linear elements a variable non-linear element.

15. (Currently Amended) Apparatus for determining if an article of interest is present comprising

said article articles of interest having at least one antenna being resonant at having one frequency of a plurality of available frequencies,

a non-linear element operatively associated with said antenna,
an RF frequency generator for directing RF energy of a particular frequency to
said antenna,

a detector for receiving reflected RF energy which has impinged on from said
antenna, and

a processor for determining from a difference between said reflected frequency
and said directed particular frequency whether the antenna is a specific antenna.

16. (Original) The apparatus of claim 15 including

 said non-linear element being a rectifying diode.

17. (Original) The apparatus of claim 15 including

 said RF frequency generator being structured to produce interrogating RF energy
in the form of a sine wave.

18. (Original) The apparatus of claim 17 including

 said antenna being structured to produce a half wave rectified sine wave from said
interrogating RF energy.

19. (Original) The apparatus of claim 18 including

 said antenna being structured to provide said half wave rectified sine wave at a
fundamental Fourier series component which is about double the frequency of said sine wave.

20. (Original) The apparatus of claim 16 including

 said RF frequency generator being structured to provide at least two said
interrogating RF frequencies.

21. (Original) The apparatus of claim 16 including

 a spectrum analyzer for analyzing said different frequencies.

22. (Original) The apparatus of claim 16 including

a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific physical condition.

23. (Original) The apparatus of claim 22 including

 said physical condition being a condition selected from the group consisting of pressure, temperature, pH, chemical concentrations, humidity, chemical environment, biological environment, radiation, and light.

24. (Currently Amended) A method of monitoring a an ambient physical property comprising

 providing an antenna having a non-linear element whose response depends on the physical property being monitored,

 interrogating said RF antenna with RF energy of a first frequency,
 converting the interrogating RF energy into reflected RF energy of a different frequency from said first frequency, said different frequency being dependent on the physical property being monitored, and

 sensing said reflected RF energy and on the basis of said different frequencies a difference between said first frequency and said different frequency to determine determining the state of said physical property.

25. (Original) The method of claim 24 wherein

 said non-linear element is a rectifying diode.

26. (Currently Amended) The method of claim 25 wherein

said specific antenna is present and said different frequency being about double said first frequency.

27. (Currently Amended) The method of claim 24 including

 said antenna assembly providing a half wave rectified sine wave from said interrogating RF energy.

28. (Original) The method of claim 27 including

 said interrogating RF energy producing a sine wave.

29. (Currently Amended) The method of claim 27 including

 said half wave rectified sine wave has a fundament fundamental Fourier series
which is about double the frequency of said sine wave.

30. (Original) The method of claim 24 including

 employing a spectrum analyzer in analyzing said different frequency.

31. (Original) The method of claim 24 including

 employing a second non-linear element cooperating with said non-linear element
to provide a determination regarding whether an article of interest is present.

32. (Currently Amended) The method of claim 24 including

 said ambient physical condition property being a condition selected from the
group consisting of pressure, temperature, pH, chemical concentrations and humidity,
chemical environment, biological environment, radiation, and light.

33. (Currently Amended) Apparatus for monitoring a an ambient physical property
comprising

 an antenna being resonant at having one frequency of a plurality of available
frequencies,

 a non-linear element operatively associated with said antenna whose response
depends on the physical property being monitored,

 an RF frequency generator for directing RF energy at a particular frequency to
said antenna,

 a detector for receiving reflected RF energy which has impinged on from said
antenna, said reflected energy having a different frequency that is dependent on the physical
property being monitored, and

a processor for determining from a difference between said particular frequency and said different frequency said reflected frequency the state of the physical property being monitored.

34. (Currently Amended) The apparatus method of claim 33 including said non-linear element being a rectifying diode.

35. (Currently Amended) The apparatus method of claim 33 including said RF frequency generator being structured to produce interrogating RF energy in the form of a sine wave.

36. (Currently Amended) The apparatus method of claim 35 including said antenna being structured to produce a half wave rectified sine wave from said interrogating RF energy.

37. (Currently Amended) The apparatus method of claim 36 including said antenna being structured to provide said half wave rectified sine wave at a fundamental Fourier series component which is about double the frequency of said sine wave.

38. (Currently Amended) The apparatus method of claim 34 including said RF frequency generator being structured to provide at least two said interrogating RF frequencies.

39. (Currently Amended) The apparatus method of claim 34 including a spectrum analyzer for analyzing said different frequencies.

40. (Currently Amended) The apparatus method of claim 34 including a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific said physical property condition.

41. (Currently Amended) The apparatus method of claim 40 including a second non-linear element cooperating with said non-linear element to provide a variable readout which is a function of a specific said physical property condition.